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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,848	07/20/2000	Ronald E. Pelrine	SRI1P022/US-4076-2	2968
22434	7590	01/15/2004	EXAMINER	
BEYER WEAVER & THOMAS LLP			ADDISON, KAREN B	
P.O. BOX 778			ART UNIT	
BERKELEY, CA 94704-0778			PAPER NUMBER	

2834

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/619,848

Applicant(s)

PELRINE ET AL.

Examiner

Karen B Addison

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-32 is/are allowed.
- 6) ☒ Claim(s) 1-27 and 33-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s) _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Allowable Subject Matter

1. Claims 28-32 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to show, a electroactive polymer arrange in a manner which causes a change in electric field in response to a deflection in the first direction; and a flexible frame coupled to polymer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5,7-8,12-13,15-16,19,20,24-27,33-34 and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Perline(SI International Artificial Muscle Research Fy 1997 page 1-33).

Perline disclose the structural limitation of a generator in figures (4.1-1,4.1-7,4.1-8,4.1-9,4.1-10,4.1-11) comprising: at least two electrodes that are compliant [that apply a voltage that produces a pressure in the polymer less than elastic restoring stress resulting from the stretch by means of electrical current and wherein electrical energy is remove by least two electrodes during contraction], a PVDF polymer electroactive polymer [arrange in a manner which causes a change in response to a deflection applied to a first portion(represented by voltage on) of the polymer, wherein a second

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portion (represented by voltage off) of the polymer is elastically pre-strained (fig. 4.11) before deflection when the polymer is applied to a first orthogonal direction to enhance the change in the electric field from a deflection in the second orthogonal direction].

Perlin also discloses, a generator converting mechanical energy in a first direction into electrical energy in fig. (4.1-10) comprising: at least two electrodes and an electroactive polymer arranged in a manner which causes a change in electric field in response to a deflection in the first direction and a stiff member (middle electrode and support) fig. 4.1-10 [coupled to at least one transducer wherein the at least one stiff member substantially preventing displacement in the second direction (represented by the arrow when actuated)].

Perline also discloses, a frame fig. 4.1-7 attached to a second portion of the polymer the frame comprising at least one aperture (a) wherein; the first portion of the polymer is arranged in a manner which causes a change in the electric field in response to a deflection applied to the third portion of the polymer;

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6, 9-11, 14, 17-18, 21-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Perline in view of Kornbluh ("Proceeding of SPIE" Electroactive Polymer Actuators and Devices" March 1999 pages (149-161)).

3. As seen above Perline discloses substantially the claim invention, however Perline do not disclose the elastic modulus, maximum strain, prestrain factor and the electric field in volts/meter in the electroactive polymer.

Kornbluh discloses a list of electroactive polymers table 1 and 2 comprising: the elastic modulus, maximum stain, pre-strain factor and the electric field in volts/meter in selective polymers (silicone elastomer, acrylic elastomer, polyurethane copolymer comprising PVDF with the characteristic of elastic modulus below 100MPa, a maximum linear strain of at least 50 percent, a pre-strained factor in the range of about 1.5 times to 50 times an original area prior to pre-strain, a polymer which can support a change in electric field at about 440 Mega Volts/meter, a polymer that generates a least about 0.15 joules per gram for the polymer and polymer that has an aspect ratio of at least 4:1.) for the purpose of obtaining a higher actuation performance. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Perline with the Electroactive polymers of Kornbluh for the purpose of obtaining higher actuation performance.

Response to Arguments

1. Applicant's arguments with respect to claim 1-36 have been considered but are moot in view of the new ground(s) of rejection.

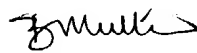
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen B Addison whose telephone number is 703-306-5855. The examiner can normally be reached on 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1317. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


BURTON S. MULLINS
PRIMARY EXAMINER

KBA
January 11, 2004